

Herbert B. Herscowitz, Ph.D.
Assistant Professor of Microbiology
Schools of Medicine and Dentistry
Georgetown University
37th and O Streets, N.W.
Washington, D.C. 20007

The Role of the Macrophage in the Immune Response: Effect of Tobacco Products
on Macrophage Function.

It has been suggested that the immune system plays a role in the regulation of expression of malignant cell clones. Macrophages participate as accessory cells in both the afferent and efferent arms of the immune response. Several studies have suggested that interference with macrophage function results in an altered immune response. Further, it has been shown that smoke and/or tobacco products result in alterations of normal phagocytic functions of macrophages, however there is a paucity of information regarding the effect of tobacco on immune function. The objective of this study is to determine the effect of cigarette smoke on the immune response of mice after chronic and acute exposure.

Initial experiments will be carried out on the in vivo effects of cigarette smoke on the immune response. Mice will be exposed to Kentucky Standard (1A1 and 1R1) Cigarette smoke on a Prototype Walton Mark II Horizontal Smoke Exposure Machine for varying periods of time. The following parameters will be investigated: acute vs. chronic exposure, time of exposure in relation to time of antigen stimulation, primary vs. secondary immune response, recovery time from smoke exposure, dose duration and frequency of smoke exposure, and possibly animal strain differences. These experiments will then be carried out in vitro by exposing culture macrophages to smoke and assessing their immune function.

The investigators have already described the system to study the in vitro anamnestic response of a dispersed lymphoid cell population. They have systems in routine operation for the evaluation of antibody-forming cells, and they have established methodology to separate lymphoid cell populations into functional types. The researchers have established a participatory role of macrophages in the anamnestic response to KLH. Animals are currently being introduced into the protocols described above.

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